



UNITED STATES PATENT AND TRADEMARK OFFICE

mn

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,334	09/30/2003	Zhen Liu	YOR920030104US1	4637

7590 05/30/2007
Frederick W. Gibb, III
McGinn & Gibb, PLLC
Suite 304
2568-A Riva Road
Annapolis, MD 21401

EXAMINER

LIU, LIN

ART UNIT	PAPER NUMBER
----------	--------------

2145

MAIL DATE	DELIVERY MODE
-----------	---------------

05/30/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/674,334

Applicant(s)

LIU ET AL.

Examiner

Lin Liu

Art Unit

2145

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

1. This office action is responsive to communications filed on 09/30/2003.

Claims 1-27 are pending and have been examined.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 21-27 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

4. With regard to **claim 21**, the instant claim is directed toward a program of instructions tangibly embodied in a program storage device readable by machine, wherein the program storage device can be software alone (see Specification, page 13, paragraph 0042, the program storage device is not specifically defined as hardware device only). Claims directed towards software alone refer to functional descriptive material, which is per se non-statutory.

Claims 22-27, which depend from claim 21, are rejected for the same rationale as in claim 21.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated

Art Unit: 2145

by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. **Claims 1-7** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-8 of copending Application No. 10/674335. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

- the limitation “modifying said header as said data packet is distributed down said distribution tree to remove encoded information concerning upper distribution levels of said distribution tree.” recited on the present application is substantially the same as the limitation “modifying said header as said data packet is distributed down said distribution tree to repair said distribution tree.” recited on the copending application #: 10/674335.

7. **Claims 8-27** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 9-32 of copending Application No. 10/674335 in view of **Auerbach et al. (patent no.: US 5,355,371)**.

8. The instant claims of the present application do not explicitly disclose detecting failed nodes and remove the failed nodes. However, Auerbach discloses detecting failed nodes and remove failed nodes (Auerbach, col. 10, lines 18-34, noted that the Tree leader recognizes the possible node failure and remove them from the tree). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the instant claims of the present invention to include the feature of detecting failed nodes and removing the failed node as taught by Auerbach with motivation being that it provides better quality of service in delivering packets from one node to another.

9. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims of present application	Claims of application #: 10/674335
Claims 1 and 2	Claim 1
Claim 1. A method of establishing transmission headers for stateless group communication of data packets to nodes in a distribution tree, said method comprising: encoding said distribution tree to produce an encoded distribution tree; creating a header including said encoded distribution tree; and adding said header to a data packet to be distributed to said distribution tree. Claim 2. The method in claim 1, further comprising modifying said header as said data packet is distributed down said distribution tree to remove encoded information concerning	Claim 1. A method of stateless group communication and repair of data packets to nodes in a distribution tree, said method comprising: encoding said distribution tree to produce an encoded distribution tree; creating a header including said encoded distribution tree; adding said header to a data packet to be distributed to said distribution tree; and modifying said header as said data packet is distributed down said distribution tree to repair said distribution tree.

upper distribution levels of said distribution tree.	
Claims 8 and 9	Claim 9
<p>Claim 8. A method of establishing transmission headers for stateless group communication of data packets to nodes in a distribution tree, said method comprising:</p> <p>encoding said distribution tree to produce an encoded distribution tree;</p> <p>creating a header including said encoded distribution tree; and</p> <p>adding said header to a data packet to be distributed to said distribution tree,</p> <p>processing said encoded distribution tree at each node, thereby indicating to which node said data packet should be next transferred.</p> <p>Claim 9. The method in claim 8, further comprising</p> <p>modifying said header as said data packet is distributed down said distribution tree to remove encoded information concerning upper distribution levels of said distribution tree.</p>	<p>Claim 9. A method of stateless group communication of data packets to nodes in a distribution tree, said method comprising:</p> <p>encoding said distribution tree to produce an encoded distribution tree;</p> <p>creating a header including said encoded distribution tree;</p> <p>adding said header to a data packet to be distributed to said distribution tree;</p> <p>detecting failed nodes down said distribution tree;</p> <p>modifying said header as said data packet is distributed down said distribution tree to skip said failed node and remove said failed node from said encoded distribution tree.</p>
Claim 15 and 16	Claim 17
<p>Claim 15. A method of stateless group communication of data packets to nodes in a distribution tree, said method comprising:</p> <p>encoding said distribution tree to produce an encoded distribution tree;</p> <p>creating a header including said encoded distribution tree; and</p>	<p>17. A method of stateless group communication of data packets to nodes in a distribution tree, said method comprising:</p> <p>encoding said distribution tree to produce an encoded distribution tree;</p> <p>creating a header including said encoded distribution tree;</p>

<p>adding said header to a data packet to be distributed to said distribution tree;</p> <p>decoding a portion of said encoded distribution tree as a node receives said data packet; and</p> <p>re-encoding said encoded distribution tree as said node passes said data packet to another node down said distribution tree.</p> <p>Claim 16. The method in claim 15, further wherein said decoding and re-encoding</p> <p>modifies said header as said data packet is distributed down said distribution tree to remove encoded information concerning upper distribution levels of said distribution tree.</p>	<p>adding said header to a data packet to be distributed to said distribution tree;</p> <p>detecting failed nodes down said distribution tree;</p> <p>modifying said header as said data packet is distributed down said distribution tree to pass said data packet around said failed node.</p>
<p>Claims 21 and 22</p> <p>Claim 21. A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform a method of establishing transmission headers for stateless group communication of data packets to nodes in a distribution tree, said method comprising:</p> <p>encoding said distribution tree to produce an encoded distribution tree;</p> <p>creating a header including said encoded distribution tree; and</p> <p>adding said header to a data packet to be distributed to said distribution tree.</p> <p>Claim 22. The program storage device in claim 21, wherein said method further comprises</p>	<p>Claim 25</p> <p>25. A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform a method of extracting circuit characteristics from a circuit design, said method comprises establishing transmission headers for stateless group communication of data packets to nodes in a distribution tree, said method comprising:</p> <p>encoding said distribution tree to produce an encoded distribution tree;</p> <p>creating a header including said encoded distribution tree;</p> <p>adding said header to a data packet to be distributed to said distribution tree;</p> <p>detecting failed nodes down said distribution tree;</p>

modifying said header as said data packet is distributed down said distribution tree to remove encoded information concerning upper distribution levels of said distribution tree.	modifying said header as said data packet is distributed down said distribution tree to skip said failed node and remove said failed node from said encoded distribution tree.
--	--

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, 2, 4-9, 11-14, 21, 22 and 24-27 are rejected under 35 U.S.C. 102(b) as being anticipated by **Crawley et al. (Patent no.: US 5,995,503)**.

Consider **claim 1**, Crawley teaches a method of establishing transmission headers for stateless group communication of data packets to nodes in a distribution tree (Crawley, figures 11 and 12), said method comprising:

encoding said distribution tree to produce an encoded distribution tree (Crawley, col. 10, lines 48-60 and col. 11, lines 1-8, noted that distribution tree is encoded);

creating a header including said encoded distribution tree (Crawley, col. 10, lines 38-60, noted that an Explicit Routing Advertisement (ERA) header); and

adding said header to a data packet to be distributed to said distribution tree (Crawley, fig. 11, col. 10, lines 38-45, noted that ERA header is encapsulated in the ERA 252 information).

Consider **claim 2**, Crawley teaches the method in claim 1, further comprising modifying said header as said data packet is distributed down said distribution tree to remove encoded information concerning upper distribution levels of said distribution tree (Crawley, col. 10, lines 30-37, and col. 11 line 61 to col. 12 line 8, noted that the ERA header is constructed by traversing the tree and it is used to remove the routing information).

Consider **claim 4**, Crawley teaches the method in claim 1, wherein said distribution tree controls the order in which said nodes receive said data packets (Crawley, col. 10, line 61 to col. 11, line 8, noted that the node is constructed in order).

Consider **claim 5**, Crawley teaches the method in claim 4, wherein by controlling the order in which said nodes receive said data packets, said encoded distribution tree permits said nodes to process said data packets upon receipt (Crawley, col. 11, lines 3-15, noted that the first hop router performs the path calculations).

Consider **claim 6**, Crawley teaches the method in claim 1, further comprising, prior to said encoding process, creating said distribution tree at a sender node based upon a dynamic group of receiver nodes (Crawley, col. 10, lines 56-59).

Consider **claim 7**, Crawley teaches the method in claim 1, wherein said encoding comprises sequentially entering addresses of nodes during a per-level traversal of said distribution tree starting from the root of said distribution tree (Crawley, col. 11, lines 1-8, noted that the routers are arranged in sequentially order).

Consider **claim 8**, Crawley, teaches a method of establishing transmission headers for stateless group communication of data packets to nodes in a distribution tree (Crawley, figures 11 and 12), said method comprising:

encoding said distribution tree to produce an encoded distribution tree (Crawley, col. 10, lines 48-60 and col. 11, lines 1-8, noted that distribution tree is encoded);

creating a header including said encoded distribution tree (Crawley, col. 10, lines 38-60, noted that an Explicit Routing Advertisement (ERA) header); and

adding said header to a data packet to be distributed to said distribution tree (Crawley, fig. 11, col. 10, lines 38-45, noted that ERA header is encapsulated in the ERA 252 information),

processing said encoded distribution tree at each node, thereby indicating to which node said data packet should be next transferred (Crawley, col. 10, line 61 to col. 11, line 8, noted that the process of encoding the distribution tree is traversed down the tree in a preorder arrangement of the node).

Consider **claim 9** the limitations of this claim are substantially the same as those in claim 2. Therefore the same rationale for rejecting claim 2 is used to reject claim 9. By this rationale **claim 9** is rejected.

Consider **claim 11** the limitations of this claim are substantially the same as those in claim 4. Therefore the same rationale for rejecting claim 4 is used to reject claim 11. By this rationale **claim 11** is rejected.

Consider **claim 12** the limitations of this claim are substantially the same as those in claim 5. Therefore the same rationale for rejecting claim 5 is used to reject claim 12. By this rationale **claim 12** is rejected.

Consider **claim 13** the limitations of this claim are substantially the same as those in claim 6. Therefore the same rationale for rejecting claim 6 is used to reject claim 13. By this rationale **claim 13** is rejected.

Consider **claim 14** the limitations of this claim are substantially the same as those in claim 7. Therefore the same rationale for rejecting claim 7 is used to reject claim 14. By this rationale **claim 14** is rejected.

Claim 21 lists all the same elements of **claim 1**, but in computer program instructions form rather than method form. Therefore, the supporting rationale of the rejection to **claim 1** applies equally as well to **claim 21**.

Consider **claim 22** the limitations of this claim are substantially the same as those in claim 2. Therefore the same rationale for rejecting claim 2 is used to reject claim 22. By this rationale **claim 22** is rejected.

Consider **claim 24** the limitations of this claim are substantially the same as those in claim 4. Therefore the same rationale for rejecting claim 4 is used to reject claim 24. By this rationale **claim 24** is rejected.

Consider **claim 25** the limitations of this claim are substantially the same as those in claim 5. Therefore the same rationale for rejecting claim 5 is used to reject claim 25. By this rationale **claim 25** is rejected.

Consider **claim 26** the limitations of this claim are substantially the same as those in claim 6. Therefore the same rationale for rejecting claim 6 is used to reject claim 26. By this rationale **claim 26** is rejected.

Consider **claim 27** the limitations of this claim are substantially the same as those in claim 7. Therefore the same rationale for rejecting claim 7 is used to reject claim 27. By this rationale **claim 27** is rejected.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. Claims 3, 10, 15-20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Crawley et al. (Patent no.: US 5,995,503)** in view of **Mittra (Patent no.: US 5,748,736)**.

With respect to **claim 3**, Crawley teaches all the claimed limitations except that he does not explicitly teach a method of decoding a portion of the distribution tree and re-encoding the distribution tree.

In the same field of endeavor, Mittra teaches a method of decoding a portion of the distribution tree and re-encoding the distribution tree (Mittra, col. 14, lines 11-19).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate the method of decoding a portion of the distribution tree and re-encoding the distribution tree as taught by Mittra in Crawley's invention with motivation being that it provides a stronger encryption algorithm in encoding the data transmission of the distribution tree.

Consider **claim 10**, the limitations of this claim are substantially the same as those in claim 3. Therefore the same rationale for rejecting claim 3 is used to reject claim 10. By this rationale **claim 10** is rejected.

With respect to **claim 15**, Crawley teaches a method of stateless group communication of data packets to nodes in a distribution tree (Crawley, figures 11 and 12), said method comprising:

encoding said distribution tree to produce an encoded distribution tree (Crawley, col. 10, lines 48-60 and col. 11, lines 1-8, noted that distribution tree is encoded);

creating a header including said encoded distribution tree (Crawley, col. 10, lines 38-60, noted that an Explicit Routing Advertisement (ERA) header); and

adding said header to a data packet to be distributed to said distribution tree (Crawley, fig. 11, col. 10, lines 38-45, noted that ERA header is encapsulated in the ERA 252 information).

However, Crawley does not explicitly teach a method of decoding a portion of the distribution tree and re-encoding the distribution tree.

In the same field of endeavor, Mittra teaches a method of decoding a portion of the distribution tree and re-encoding the distribution tree (Mittra, col. 14, lines 11-19).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate the method of decoding a portion of the distribution tree and re-encoding the distribution tree as taught by Mittra in Crawley's invention with motivation being that it provides a stronger encryption algorithm in encoding the data transmission of the distribution tree.

With respect to **claim 16**, Crawley teaches the method in claim 15, further wherein said decoding and re-encoding modifies said header as said data packet is distributed down said distribution tree to remove encoded information concerning upper distribution levels of said distribution tree (Crawley, col. 10 lines 30-37, and col. 11 line 61 to col. 12 line 8, noted that the ERA header is constructed by traversing the tree and it is used to remove the routing information).

With respect to **claim 17**, Crawley teaches the method in claim 15, wherein said distribution tree controls the order in which said nodes receive said data packets (Crawley, col. 10, line 61 to col. 11, line 8, noted that the node is constructed in order).

With respect to **claim 18**, Crawley teaches the method in claim 17, wherein by controlling the order in which said nodes receive said data packets, said encoded distribution tree permits said nodes to process said data packets upon receipt (Crawley, col. 11, lines 3-15, noted that the first hop router performs the path calculations).

With respect to **claim 19**, Crawley teaches the method in claim 15, further comprising, prior to said encoding process, creating said distribution tree at a sender node based upon a dynamic group of receiver nodes (Crawley, col. 10, lines 56-59).

With respect to **claim 20**, Crawley teaches the method in claim 15, wherein said encoding comprises sequentially entering addresses of nodes during a per-level traversal of said distribution tree starting from the root of said distribution tree (Crawley, col. 11, lines 1-8, noted that the routers are arranged in sequentially order).

Consider **claim 23**, the limitations of this claim are substantially the same as those in claim 3. Therefore the same rationale for rejecting claim 3 is used to reject claim 23. By this rationale **claim 23** is rejected.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- O'Toole et al. (Patent no.: US 7,185,077 B1) discloses a method for managing the arrangement of nodes in a network.

Art Unit: 2145

- Ishiguro (Publication no.: US 2003/0185397 A1) discloses information processing apparatus with topology tree in managing copyrights using encryption and decryption algorithms in the tree nodes.
- Cherkasova (publication no.: US 2004/0143647 A1) discloses a system and method for efficiently replicating a file among a plurality of recipients in a reliable manner.
- Padmanabham et al. (Publication no.: US 2004/0143672 A1) discloses a method for distributing streaming content through cooperative networking.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lin Liu whose telephone number is (571) 270-1447.

The examiner can normally be reached on Monday - Friday, 7:30am - 5:00pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Cardone can be reached on (571) 272-3933. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2145

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

L.Liu
05/23/2007



JASON CARDONE
SUPERVISORY PATENT EXAMINER